

described, which are successively (after the pupal state is assumed) 1, 13, 18, 24, 36, 48, and 58 hours. According to his account the second and third (original) ganglia at this period "approach and coalesce, and the double ganglion thus formed is only separated from the larger thoracic mass, composed of the fourth and fifth ganglia, and part of the sixth, by very short but much enlarged cords." As the figures given by him do not in themselves show how this amalgamation of the second and third ganglia is effected, I examined the nervous cord of the present species, *Hamadryas io*, 48, 51 and 55 hours after pupation, with the following results: The pupa of 48 hour's age differs from that of *Aglais urticae* only in the separation of the fourth ganglion from the united fifth and sixth; very short and broad ribbons connected them, but they were unmistakably separated by half the width of the fourth ganglion; while the third and fourth ganglia were separated by about the diameter of the latter ganglion. At 51 hours the condition was more as

represented by Newport at 48 hours in *A. urticae*, the fourth, fifth and sixth ganglia being completely amalgamated into a single long ovate mass, while the third, though clearly distinct from the mass behind it, was separated from it by only less than half its own diameter, very short, stout ribbons uniting the two; it was also of the same size as at 48 hours, and the second ganglion, instead of travelling toward the third, as Newport asserts, retained very nearly or quite its own place, but was reduced in size, being gradually absorbed in place by the cord. This absorption was entirely effected at 55 hours, as also was the complete amalgamation of the third ganglion with the mass behind it. The second ganglion then is not amalgamated with the third, but disappears in place—a point quite in keeping with the lessening importance, but continued integrity, of the prothorax generally.

*Male generative organs.* The testes form a globular mass 1.5 mm. in diameter.

(To be continued on p. 307.)

## XYLOCOPA PERFORATING A COROLLA-TUBE.

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IN October 1881 I noticed a *Xylocopa* perforating the corolla-tube of a salver-shaped flower, somewhat resembling that of a *Petunia*. The bee alighted on the five-lobed spreading top of the flower, which, as the flowers grew, was situated almost perpendicularly to the horizon, and immediately crawled over the edge, between the lobes, so as to reach the outside of the tube, which was somewhat

fluted. Applying its sharp and wedge-shaped maxillae to the grooved surface of the tube, it split this open, three or four millimetres from the base, and continued the split to the base, where the nectar was situated. It then sucked out the nectar quickly, and proceeded to another flower, upon which the operation was repeated.